Visit to ANL Calibration Facility April 29. 2009

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Calibration area and source:

The facility should have more than one Cs137 source. A selection of sources is suggested, each a factor of 10 greater than previous. It may also be helpful if there was more than one exposure room, one for higher exposures and one for lower exposures.

The use of attenuators should be eliminated since this changes the energy spectrum. If a proper selection of sources is used, there will be no need for attenuators.

The pile of lead bricks around the source projector should be covered and contained to prevent bricks from falling and transferring the lead oxide.

The background in the exposure room seemed to be too high for calibration of low range instruments because of the storage location of a neutron source in the area.

The table used to move instruments a distance from the calibration source is not easily adjusted. The technician must continually press buttons back and forth to set a distance. A new table that can accept an input from a keyboard to set a distance and then automatically move to the desired distance would be helpful.

Procedures and methods:

After reviewing Procedure 016 Calibration of Geiger Mueller (GM) Survey Instruments I felt that the first few pages of the procedure was overloaded with a bunch of information which is nice to know, but I don't feel is necessary to document on every procedure. This would be better documented in one place, perhaps in the overall calibration program statement. After talking with Scott he informed me that there was a driver that required this format.

I also reviewed three calibration certificates for procedure 016. I thought it was somewhat awkward to have more than one certificate for one procedure, but since 016 covers more than one instrument, it makes sense in this case. I liked seeing the numbers filled out for the pulse rate, range and acceptance range in certificate 016-A1 and 016-A2. This eliminates the possibility of errors by the calibration technician and should be done as much as possible throughout all certificates. The technician should only have to record measurements and results, and not calculate acceptance tolerances such as in 016-B1. I was also bothered by the note in 016-B1 "Chose exposure rate close to 4, 40, 400 and 1000 mR/h from the current corrected decay table." The technician should not have to choose an exposure. The exposure should be preset in the certificate, as well as the distance used and attenuator.

I reviewed the current decay corrected table and notice that the decays were based on fixed distances rather than exposure rates. That explained the “Chose exposure rate close to …”. I recommend that your sources be decayed based on exposure rate rather than distance. This will allow your acceptance ranges, exposure rates and attenuators or different sources to be fixed and documented in the certificate for ease of use for the technician. The distances required to get the needed exposures can be linked to the decay table which will automatically update every certificate when the decay table changes.

Operation:

Calibration due lists are e-mailed to each customer. I noticed that in the top of the message was a statement that said something like “Instruments that are out of calibration must be tagged out of service.” I thought that was a good thing to have on the due list. I also notice in the list I saw that there were a couple of instruments that were a month or more over due for calibration. I suggest adding some text in bold next to the past due instrument **PAST DUE FOR CALIBTATION**.

To make things more efficient and for quality calibrations, field calibration and the transporting of instruments by technicians should be discontinued. You provide the service of quality calibrations and should not be burdened with transporting and scheduling the pickup of instruments. That job should be left up to the users of those instruments. As for field calibrations, you cannot get quality calibrations using poor geometry, unreliable positioning of calibration sources and uncontrollable climate conditions. Thus is the reason this should be discontinued. I heard that technicians in some cases have to climb ladders and hold sources at the end of a stick for field calibrations; Does this sound safe?

I was told that new instruments were being purchased that would increase the instrumentation fleet by about 15% and was asked if it was reasonable to request an additional technician, definitely especially under the current working conditions.